

What is claimed is:

1. An eye characteristic measuring apparatus comprising:  
a light source part for emitting a light flux with a first

5 wavelength;

a first illuminating optical system for illuminating a minute area on a retina of a subject eye with the light flux from the light source part;

a first light receiving optical system for receiving a part  
10 of a reflected light flux reflected and returned from the retina of the subject eye through a first conversion member including a lens part having a long focal point or high sensitivity and for converting the reflected light flux into substantially at least 17 beams;

a second light receiving optical system for receiving a  
15 part of the reflected light flux reflected and returned from the retina of the subject eye through a second conversion member including a lens part having a short focal point or low sensitivity or high density and for converting the reflected  
20 light flux into substantially at least 17 beams;

a first light receiving part for receiving the received light flux of the first light receiving optical system;

a second light receiving part for receiving the received light flux of the second light receiving optical system;

a measurement condition setting part for setting a  
25 measurement condition of the first and/or the second light receiving optical system on the basis of an output signal from the second light receiving part; and

an arithmetic part for obtaining an optical characteristic  
30 of the subject eye on the basis of an output of the first light

receiving part and/or the second light receiving part.

2. An eye characteristic measuring apparatus according to claim 1, wherein the measurement condition setting part corrects  
5 the lower order aberrations with respect to the first and/or the second light receiving optical system on the basis of the output of the second light receiving part.

3. An eye characteristic measuring apparatus comprising:  
10 a light source part for emitting a light flux with a first wavelength;

a first illuminating optical system for illuminating a minute area on a retina of a subject eye with the light flux from the light source part;

15 a first light receiving optical system for receiving a part of a reflected light flux reflected and returned from the retina of the subject eye through a first conversion member including a lens part having a long focal point or high sensitivity and for converting the reflected light flux into substantially at least  
20 17 beams;

a second light receiving optical system for receiving a part of the reflected light flux reflected and returned from the retina of the subject eye through a second conversion member including a lens part having a short focal point or low  
25 sensitivity or high density and for converting the reflected light flux into substantially at least 17 beams;

a first light receiving part for receiving the received light flux of the first light receiving optical system;

a second light receiving part for receiving the received  
30 light flux of the second light receiving optical system; and

an arithmetic part for obtaining an optical characteristic of the subject eye on the basis of an output of the first light receiving part and/or the second light receiving part and for estimating a change of direction or an arrangement of the beams by the first conversion member on the basis of the output from the second light receiving part.

4. An eye characteristic measuring apparatus according to claim 3, further comprising a measurement condition setting part for setting a measurement condition of the first and/or the second light receiving optical system,

wherein the measurement condition setting part corrects a lower order aberrations with respect to the first and/or the second light receiving optical system on the basis of the output of the second light receiving part.

5. An eye characteristic measuring apparatus according to claims 1 or 3, wherein the illuminating optical system illuminates the minute area on the retina of the subject eye with the thin beams of the light flux from the light source part.

6. An eye characteristic measuring apparatus according to claims 1 or 3, wherein the illuminating optical system illuminates the minute area on the retina of the subject eye with the wide beams of the light flux from the light source part.

7. An eye characteristic measuring apparatus according to claims 1 or 3, wherein the optical characteristic is obtained on the basis of the output of the second light receiving part, and as a result, when there are third or higher order aberrations with

a predetermined amount or more, the arithmetic part makes a result on the basis of the output of the second light receiving part the optical characteristic of the subject eye.

5           8. An eye characteristic measuring apparatus according to  
claims 2 or 4, wherein the optical characteristic is obtained on  
the basis of the output of the second light receiving part, and  
as a result, when three or higher order aberrations with a  
predetermined amount or more are not obtained, the measurement  
10 condition setting part changes the measurement condition of the  
first and/or the second light receiving optical system by the  
optical characteristic obtained on the basis of the second light  
receiving part, and the arithmetic part obtains the optical  
characteristic of the subject eye on the basis of the output of  
15 the first light receiving part after the change.

          9. An eye characteristic measuring apparatus according to  
claims 2 or 4, wherein the optical characteristic is obtained on  
the basis of the output of the second light receiving part, and  
20 as a result, when three or higher order aberrations with a  
predetermined amount or more are not obtained, the measurement  
condition setting part changes the measurement condition of the  
first and/or the second light receiving optical system by the  
optical characteristic obtained on the basis of the second light  
25 receiving part, and the arithmetic part obtains the optical  
characteristic of the subject eye on the basis of the outputs of  
the first light receiving part and the second light receiving part  
after the change.

30           10. An eye characteristic measuring apparatus according to

claims 1 or 3, wherein the arithmetic part obtains a position of a received light point in the first light receiving part on the basis of a position of a received light point in the second light receiving part with the short focal point or the low sensitivity  
5 or the high density.

11. An eye characteristic measuring apparatus according to claims 1 or 3, wherein the arithmetic part obtains a position of a received light point in the first light receiving part on the  
10 basis of a deviation direction and a deviation amount of a received light point in the second light receiving part with the short focal point or the low sensitivity or the high density.

12. An eye characteristic measuring apparatus according to  
15 claims 1 or 3, wherein the arithmetic part estimates a movement amount of a point image relating to the output of the first light receiving part by using Zernike coefficients obtained on the basis of the output of the second light receiving part.

20 13. An eye characteristic measuring apparatus according to claims 1 or 3, wherein in the second light receiving optical system, a change of the beam converted by the second conversion member over a measurable range is set to be smaller than a conversion pitch of the second conversion member, and as a result,  
25 an easy and speedy signal processing is realized.

14. An eye characteristic measuring apparatus according to claims 1 or 3, wherein in the second light receiving optical system, a change of the beam converted by the second conversion  
30 member over a measurable range is set to be smaller than a

conversion pitch of the second conversion member, and as a result, a defective position of spot images can be easily detected, or detection ranges of the respective spot images can be uniformly detected without overlap, and an easy and speedy signal  
5 processing of the beam is realized.

15. An eye characteristic measuring apparatus according to claims 1 or 3, wherein in the first light receiving optical system, a change of the beam converted by the first conversion member over  
10 a measurable range is set to be larger than a conversion pitch of the first conversion member, and as a result, a measurement with high sensitivity and high accuracy can be performed.

15 16. An eye characteristic measuring apparatus according to claims 1 or 3, further comprising a Hartmann image display part for receiving the signal from the first light receiving part and/or the second light receiving part, and the Hartmann image display part displays a first Hartmann image according to the  
20 first conversion member including the lens part with the high sensitivity or the long focal point and/or a Hartmann image according to the second conversion member including the lens part with the high density or the low sensitivity or the short focal point.